

IN THE CLAIMS:

Please cancel claims 2, 3, 10, 11, 16, 17, 18, 19 and 20.

Please amend claims 1, 4, 9 and 12 as follows:

A?
1. (Amended) A direct antifreeze cooled fuel cell for producing electrical energy from a reducing fluid and a process oxidant stream, comprising:

- a. an electrolyte secured between an anode catalyst and a cathode catalyst;
- b. a porous anode substrate secured in direct fluid communication with the anode catalyst for passing the reducing fluid stream adjacent the anode catalyst and a wetproofed cathode support means secured in direct fluid communication with the cathode catalyst for passing the process oxidant stream adjacent the cathode catalyst;
- c. a porous cooler plate secured in direct fluid communication with the wetproofed cathode support means; and,
- d. a direct antifreeze solution passing through the porous cooler plate for cooling the fuel cell, wherein the direct antifreeze solution is a special direct antifreeze solution having;
 - i. a freezing point of at least -20°F ;
 - ii. a surface tension greater than 60 dyne/cm at an operating temperature of the fuel cell;
 - iii. a partial pressure of antifreeze above the solution at the cell operating temperature that is less than 0.005 mm Hg; and,
 - iv. a capacity of being oxidized by the anode and cathode catalysts at fuel cell voltages.

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4. (Amended) The direct antifreeze cooled fuel cell of Claim 1, wherein the fuel cell includes a pressure control means for maintaining a positive pressure differential between the process oxidant stream passing through the fuel cell and the antifreeze solution passing through the porous cooler plate so that the process oxidant stream within the fuel cell is at a greater pressure than the antifreeze solution within the cooler plate.

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9. (Amended) A direct antifreeze cooled fuel cell for producing electrical energy from a reducing fluid and a process oxidant stream, comprising:

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- a. an electrolyte secured between an anode catalyst and a cathode catalyst;
 - b. a wetproofed anode support means secured in direct fluid communication with the anode catalyst for passing the reducing fluid stream adjacent the anode catalyst and a wetproofed cathode support means secured in direct fluid communication with the cathode catalyst for passing the process oxidant stream adjacent the cathode catalyst;
 - c. a porous anode cooler plate secured in direct fluid communication with the wetproofed anode substrate means; and a porous cathode cooler plate secured in direct fluid communication with the wetproofed cathode support means; and,
 - d. a direct antifreeze solution passing through the porous anode and cathode cooler plates for cooling the fuel cell, wherein the antifreeze solution is a special direct antifreeze solution having;
 - i. a freezing point of at least -20°F;
 - ii. a surface tension greater than 60